REMARKS

The undersigned thanks the Examiner for the courtesies extended during the interview of June 20, 2007. During the interview, the undersigned explained to the Examiner that unlike the prior art surface analysis devices and methods, the device and methods of the embodiments of this invention have an unique feature that the sample molecule that needs to be identified is identified even though the sample molecule has been removed from the surface analysis device *prior to* the simultaneous scanning operation of the surface analysis device. This feature of the embodiments of the invention has several advantages. First, one can identify a sample molecule that cannot be identified by the surface scanning device directly on its own, for example, because the size of the sample molecule could be outside the detectable range of the surface scanning device or the sample molecule loses its structure or orientation during the scanning process. Second, one can identify a sample molecule that could potentially damage the microscopy tips of the surface scanning device.

As the sample molecule itself is not directly scanned by the surface scanning device by the embodiments of the surface scanning device of this invention, claims 1 and 15 recite "an analyzer coupled with the scanning array configured to simultaneously scanned information from the scanning array and utilizing the simultaneously scanned information to identify at least a portion of a sample molecule associated with the nanocodes and removed from the substrate prior to the simultaneous scan of the plurality of the tag elements, wherein the sample molecule is different from the plurality of the nanocodes." As the prior art devices directly scan and identify the sample molecule, they do not contain an analyzer that can "*identify at least a portion of a sample molecule associated with the nanocodes and removed from the substrate prior to the simultaneous scan*" as recited in claims 1 and 15.

Also, claim 33 has been amended to clarify "orienting a sample molecule and associated nanocodes on the surface of the substrate, ... removing at least the sample molecule from the surface of the substrate; [and] *subsequently* simultaneously scanning the plurality of tag elements of the plurality of the nanocodes using a scanning array having two or more microscopy tips."

Emphasis added. As explained above, none of the cited prior art teaches identifying a sample molecule that has been removed from the surface of the substrate of the surface analysis device prior to scanning. During the interview, the Examiner agreed with the above comments of the undersigned and said that the amended claims appear to be patentable over the cited prior art.

The amendment of claims 1, 15, 20 and 33 are supported by paragraphs [0018], [0023], [0029] and [0030].

Claim Rejection - 35 U.S.C. §112

Claims 1-4, 12-15, 20-24 and 30-37 were rejected under 35 USC 112, first paragraph, for lack of enabling disclosure. This rejection is respectfully traversed.

The Examiner's basis for this rejection is that the specification fails to provide a definition of the term "nanocode." Applicants respectfully disagree. One can define a thing either in words or by showing the thing in a figure. In the present application, an embodiment of the "nanocode" is shown in Figure 3. This figure shows that a nanocode 300 comprises a molecule 302 and a nanotube assembly 320, which is shown in Figure 1 and explained in paragraph [0018] as being a tag element 100 in one possible embodiment. In any case, for the purposes of clarification of the term "nanocode," the independent claims now recite "each nanocode comprising a tag element and a reactive molecule." The "tag element" has its ordinary meaning as being an identifier. The tag element could be a nanotube as explained in the specification or anything that is capable of functioning as a tag or identifier. The term "reactive molecule" has its ordinary meaning as being a molecule that is capable of reacting with another element or molecule. For example, as explained in the specification, the reactive molecule could be a DNA molecule that can hybridize with another DNA molecule.

Claim Rejection - 35 U.S.C. §103

Claims 1-4, 12-15, 20-23, 30 and 33-37 were rejected as being obvious over US 2004/0058328 (Chan) in view of US 2003/0033863 (Ashby). Claims 4, 24 and 37 were rejected as being obvious over Chan in view of Ashby, further in view of US 5,047,633 (Finlan). These rejections should be withdrawn as Chan is prior art under 35 USC 102(e). Chan and the claimed invention were, at the time the claimed invention was made, owned by Intel Corporation or subject to an obligation of assignment to Intel Corporation. Thus, under 35 USC 103(c), the obviousness rejections in light of Chan should be withdrawn.

Claims 1-4, 12-15, 20-24, 33, 35 and 37 were rejected as being obvious over Ashby in view of Finlan. This rejection is respectfully traversed.

Claims 30-32 were not rejected over Ashby in view of Finlan. The limitations of claims 30-32 are included in claims 20, 31, 32 and 44. Thus, claims 20, 31, 32 and 44 should be allowable.

Rejection of independent claims 1, 15 and 33: The prior art fails to disclose "a substrate having a pattern on a surface of the substrate to orient a plurality of nanocodes, each nanocode comprising a tag element and a reactive molecule" recited in claim 1. The prior art fails to disclose "a substrate holder having a pattern on a surface of the substrate holder to orient a plurality of nanocodes, each nanocode comprising a tag element and a reactive molecule" recited in claim 15. The prior art also fails to disclose "orienting nanocodes on the surface of the substrate, each nanocode comprising a tag element and a reactive molecule, to preserve orientation of a plurality of tag elements of the nanocodes" recited in claim 33.

The Examiner is requested to refer to paragraph [0029] of the specification. As explained in paragraph [0029] of the specification, after a sufficient number of nanocodes 430 are attached to an unknown sample molecule 420, of which at least portions of which need to be identified, the unknown sample molecule 420 is removed from the reaction chamber 410 and placed on a substrate 450, as shown in Figure 5 of the specification. In one embodiment, the substrate

surface is *patterned* to orient the nanocodes 430. The nanocodes 430 are separated from the unknown sample molecule 420 by a denaturing step. However, the ordering of the nanotube assemblies 432 is *preserved* in the denaturing step because of the patterned surface of the substrate. As the ordering of the nanotube assemblies is preserved, it is possible by the surface analysis device of this invention to identify portions of the unknown sample molecule 420 associated with the nanocodes 430 by simultaneously scanning a plurality of tag elements of the nanocodes 430 *instead of* scanning the unknown sample molecule 420, which has been removed from the surface of the substrate by denaturing. The prior art devices and methods are directed to *directly scanning* the unknown sample molecules and identifying them. The prior art devices and methods do *not* identify the unknown sample molecules by scanning a plurality of tag elements that are different from the unknown sample molecules that are identified. In the prior art devices and methods, there was no need to configure the devices and methods to orient the molecules scanned by the microscopy tips of the prior art devices to preserve the orientation of the molecules. Thus, neither Ashby nor Finlan disclose either explicitly or inherently "a pattern on a surface" of the surface analysis device as recited in claims 1 and 15 or "orienting nanocodes on the surface of the substrate, each nanocode comprising a tag element and a reactive molecule, to preserve orientation of a plurality of tag elements of the nanocodes" recited in claim 33.

Claim 34 and 36 were not rejected as being obvious over Ashby in view of Finlan. New claims 38 and 39, new claims 40 and 41, and new claims 42 and 43, respectively, contain the limitations of claims 34 and 36.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

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